Amendments to the Claims

The listing of claims presented below will replace all prior versions, and listings, of claims in the application.

Listing of claims:

1. (**currently amended**) A method for performing mobile IPv6 fast ~~handover based on an access router (AR)~~ **level 2 between access points (APs) and a mobile node (MN) and layer 3 handover between access routers (ARs) and a mobile node (MN), each AR having a subnet composed of at least one access point (AP) that can interface between the MN and each corresponding AR, the method** comprising the steps of:

receiving, at a given AR, a modified Router Solicitation (RS) message from the MN after completion of a layer 2 handover between the MN and the given AR, the modified RS message having a message format comprising a 'C' flag signifying that a Care of Address (CoA) is set and which the 'C' flag transmits a source link-layer address option;

transmitting, from the given AR, a general Router Advertisement (RA) message to the MN when the layer 2 handover of the MN occurs between a previously connected AP and a newly connected AP such that the previously connected AP and the newly connected AP both belong to the same subnet of the given AR, wherein the general RA message transmitted from the given AR is for directing the MN to continue using the CoA set by the MN;

generating, at the given AR, a new CoA when layer 3 handover of the MN occurs between the previous connected AP and the newly connected AP such that the previously connected AP does not belong to a subnet of the given AR and the newly connected AP belongs to the subnet of the given connected AR;

performing, at the given AR, a Duplicate Address Detection (DAD) process to inspect a uniqueness of the new CoA wherein the performing step is performed subsequent to the generating step; and

transmitting, from the given AR to the MN, a modified RA message containing the new CoA to update a network address of the MN, wherein the transmitting step is performed subsequent to the performing step

~~a) when a mobile node (MN) completes a layer 2 handover, a new access router (AR) receiving a modified Router Solicitation (RS) message from the mobile node (MN);~~

~~b) detecting layer 3 movement of the mobile node (MN) at the new access router (AR) based on the received modified RS message transmitted from the mobile (MN) node to the new access router (AR);~~

~~c) when the mobile node (MN) does layer 3 movement, the new access router (AR) generating a new Care of Address (CoA) for transmission to the mobile node (MN) and for use as the network interface address of the mobile node (MN);~~

~~d) performing Duplicate Address Detection (DAD) at the new access router (AR) to inspect uniqueness of the generated CoA; and e) transmitting a modified Router Advertisement (RA) message after performing Duplicate Address Detection (DAD) at the new access router (AR), which corresponds to the modified RS message transmitted from the mobile node (MN), to the mobile node (MN) from the new access router (AR),~~

~~wherein the mobile node (MN) does not perform Duplicate Address Detection (DAD) after receiving the modified Router Advertisement (RA).~~

2-3. (canceled)

4. **(currently amended)** The method as recited in claim 1, ~~wherein, in the step a), the access router (AR) receives the modified RS message from the mobile node (MN) as soon as the layer 2 handover is completed at the mobile node (MN)~~ **wherein the MN transmits the modified RS as soon as the layer 2 handover is complete**.

5. **(currently amended)** The method as recited in claim 4, ~~wherein, the step b), the movement of the mobile node (MN) in the layer 3 is detected at the access router (AR) by comparing a neighbor cache value of the access router (AR) and a layer 2 identifier of the mobile node (MN) included in the modified RS message, which is~~

~~transmitted from the mobile node (MN)~~ **wherein movement of the MN in layer 3 is detected by the given AR when the given AR determines that the previously connected AP does not belong to the subnet of the given AR**.

6. (canceled).

7. **(currently amended)** The method as recited in claim **[[6]]** 1, wherein the modified RA message includes a flag which signifies the generation of the **new** CoA ~~(CoA Generate)~~.

8-9. (canceled)

10. **(new) The method as recited in claim 1, wherein wherein the MN does not perform the DAD process after receiving the modified RA.**